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| 10/084,022      | 02/25/2002  | Daniel Alvarez JR.   | 7184-PA15           | 8467             |

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EXAMINER

SINES, BRIAN J

ART UNIT PAPER NUMBER

1743

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/084,022

Applicant(s)

ALVAREZ ET AL.

Examiner

Brian J. Sines

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/6/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 and 24 is/are allowed.
- 6) ☒ Claim(s) 1-18, 20-23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1 – 6, 11 – 17, 20 – 22 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bies (U.S. Pat. No. 2,364,940).

Bies teaches a methodology for the quantitative analysis of a gas sample comprising hydrocarbons in concentrations of approximately 20 parts per million. The concentration level of oxidizable contaminant is considered a result effective variable. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Bies teaches that the analysis is customarily carried out by subjecting the gas to combustion and measuring the combustion products. Bies teaches that when the combustion products measured are carbon dioxide and water, the measurement of these two constituents will yield information from which the concentration of hydrogen and hydrocarbons in the gas sample can be calculated (see p. 1, left col., lines 1 – 23). Bies is silent to the specific teaching of utilizing the stoichiometric relationship found in an appropriate oxidation reaction in determining the concentration of the original gas sample. However, combustion or oxidation reactions are well known in the art to follow stoichiometric oxidation reaction equations (see MPEP § 2144.03). The Courts have held that the rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from the knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) (see MPEP § 2144). Furthermore, the Courts have held that the prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. See *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) (see MPEP § 2143.02). Consequently, in view of the teachings of Bies, a person of ordinary skill in the art would accordingly have had a reasonable expectation of success of utilizing the stoichiometric relationship of an oxidation reaction in determining the components of the original gaseous sample in order to calculate the hydrocarbon concentration of the original sample. Therefore, it would have been obvious to a person of ordinary skill in the art to provide a hydrocarbon detection methodology comprising the steps of: (a) subjecting a gas sample comprising an

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oxidizable component to a combustion or oxidation reaction; (b) determining the quantity of the combustion products; and (c) utilizing the information obtained from step (b), determining the amount of hydrocarbons in the original sample via the use of the stoichiometric relationship of an oxidation reaction equation.

Regarding claims 3 – 6, Bies teaches that the combustion of the hydrogen or hydrocarbon component or oxidizable contaminant contained within the gas sample is complete (see p. 1, left col., lines 20 – 23). Hence, the concentration of the oxidizable component after combustion is assumed to be zero or negligible at least.

Regarding claim 11, as discussed above, since complete combustion of the oxidizable component or contaminant is performed, it is deemed obvious to a person of ordinary skill in the art that the oxidation product has a higher concentration in the portion after oxidation, than did the contaminant prior to combustion oxidation.

Regarding claims 13 and 14, Bies teaches the use of oxygen addition during combustion (see p. 1, left col., lines 23 – 45).

Regarding claim 16, Bies teaches that the gas samples may comprise a plurality of oxidizable components, such as ethane and propane (see p. 1, left col., lines 1 – 9).

Regarding claim 20, it is considered obvious to a person of ordinary skill in the art to provide a transportable or portable system as claimed, since absent unexpected results, the Courts have held that making an old device portable is an obvious design. See *In re Lindberg*, 93 USPQ 23 (CCPA 1952) (see MPEP § 2144.04).

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2. Claims 7 – 10, 18, 23, 25 & 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bies, as applied to claims 1 – 6, 11 – 16 and 20 above, and further in view of Oh et al. (U.S. Pat. No. 5,736,104 A).

As discussed above, Bies teaches a methodology for the quantitative analysis of a gas sample comprising hydrocarbons. Bies does not specifically teach the utilization of an oxidation catalyst as claimed. However, as evidenced by Oh et al., the use of oxidation catalysts in effecting catalytic oxidation of gas samples comprising hydrocarbons are well known in the art (see MPEP § 2144.03). Oh et al. teach the use of an oxidation transition metal catalyst utilizing an alumina support substrate in a hydrocarbon gas sensing apparatus (see col. 2, lines 25 – 65). Hence, as shown by Oh et al., a person of ordinary skill in the art would accordingly have had a reasonable expectation for success of incorporating the use of an oxidation catalyst for facilitating effective catalytic oxidation. The Courts have held that the prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. See *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) (see MPEP § 2143.02). Therefore, it would have been obvious to a person of ordinary skill in the art to utilize an oxidation catalyst, as shown by Oh et al., with the methodology of Bies, in order to facilitate effective catalytic oxidation and subsequent sample concentration measurement.

***Allowable Subject Matter***

The indicated allowability of claims 17 & 18 is withdrawn.

Claims 19 & 24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

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Regarding claims 19 & 24, the cited prior art neither teach nor fairly suggest the methodology for detecting and identifying an oxidizable contaminant in a gas stream incorporating the step of analyzing a hydrocarbon of unknown identity and further comprising determining the saturation ratio of the hydrocarbon component from the analysis of the oxidized product, such that the identity of the hydrocarbon component can then be determined.

***Response to Arguments***

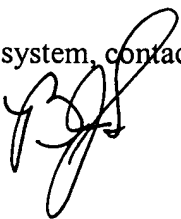
Applicant's arguments with respect to the pending claims have been considered, but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines, Ph.D. whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'Y. Sines', is located at the bottom left of the page.